WE CLAIM:

1. A method for depositing a uniform layer of a metal on the interior surface of a cavity having and aspect ratio greater than about 8:1 comprising

providing an electrically conductive substrate having a cavity therein said cavity having a ratio of depth to at least one transverse dimension greater than 8:1;

immersing said substrate as an electrode in an electroplating bath containing ions of a metal to be deposited onto said surface, wherein said electroplating bath is devoid of at least one additive selected from the group consisting of levelers and brighteners;

immersing a counter electrode in said plating bath;

passing an electric current between said electrodes;

wherein,

said electric current is a modulated reversing electric current comprising a train of pulses that are cathodic with respect to said substrate and pulses that are anodic with respect to said substrate,

said cathodic pulses have a charge transfer ratio with respect to said anodic pulses greater than one,

said cathodic pulses have a duration in the range from about 100 μs to about 19.8 milliseconds, and

said anodic pulses are shorter than said cathodic pulses and have a pulse duration in the range from about 2 microseconds to about 10 milliseconds.

2. The method of Claim 1, wherein said cathodic pulse has a duration in the range of from about 200 μs to about 14.2 milliseconds.

3. The method of Claim 1, wherein said cathodic pulse has a duration in the range of from about 334 μs to about 12.4 milliseconds.

4. The method of Claim 1, wherein said cathodic pulse has a duration in the range of from about 417 μs to about 12.4 milliseconds.

5. The method of Claim 1, wherein said anodic pulse has a duration in the range of from about 4 μs to about 7.2 milliseconds.

6. The method of Claim 1, wherein said cathodic pulse has a duration in the range of from about 6.7 μs to about 6.2 milliseconds.

7. The method of Claim 1, wherein said cathodic pulse has a duration in the range of from about 8.3 μs to 6.2 milliseconds.

8. The method of Claim 1, wherein said pulse train has a frequency in a range from about 50 Hz to about 5000 Hz

9. The method of Claim 1, wherein said pulse train has a frequency in a range from about 70 Hz to about 2500 Hz

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10. The method of Claim 1, wherein said pulse train has a frequency in a range from about 80 Hz to about 1500 Hz

11. The method of Claim 1, wherein said pulse train has a frequency in a range from about 80 Hz to about 1200 Hz

12. The method of Claim 1, wherein said cathodic pulses have a duty cycle greater than about 50 %.

13. The method of Claim 1, wherein said cathodic pulses have a duty cycle from about 60 % to about 99 %.

14. The method of Claim 1, wherein said cathodic pulses have a duty cycle from about 70 % to about 95 %.

15. The method of Claim 1, wherein said cathodic pulses have a duty cycle from about 80 % to about 95 %.

16. The method of Claim 1, wherein said anodic pulses have a duty cycle less than about 50 %.

17. The method of Claim 1, wherein said anodic pulses have a duty cycle from about 30 % to about 1 %.

18. The method of Claim 1, wherein said anodic pulses have a duty cycle from about 30 % to about 5 %.

19. The method of Claim 1, wherein said anodic pulses have a duty cycle from about 15 % to about 5 %.

20. The method of Claim 1, wherein said cavity has an aspect ratio greater than about 10:1.

21. The method of Claim 1, wherein said cavity has an aspect ratio greater than about 15:1.

22. The method of Claim 1, wherein said cavity has an aspect ratio greater than about 20:1.

23. The method of Claim 1, wherein said cavity is a through-hole having an aspect ratio greater than about 8:1.

24. The method of Claim 1, wherein said cavity is a through-hole having an aspect ratio greater than about 10:1.

25. The method of Claim 1, wherein said cavity is a through-hole having an aspect ratio greater than about 15:1.

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26. The method of Claim 1, wherein said cavity is a through-hole having an aspect ratio greater than about 20:1.

27. The method of Claim 1, wherein said plating bath is devoid of levelers.

28. The method of Claim 1, wherein said plating bath is devoid of brighteners.

29. The method of Claim 1, wherein said plating bath is devoid of levelers and brighteners.

30. The method of Claim 1, wherein, said plating bath is an aqueous acidic copper sulfate bath incorporating about 40 to about 80 g/L of copper sulfate, a molar ratio of sulfuric acid to copper sulfate of about 5:1 to about 8:1, about 5 % of

polyethylene glycol and about 30 ppm to about 60 ppm of chloride ion.

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